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Complete Streets Chicago Design & Sustainable Urban Infrastructure Guidelines

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Complete Streets Policy (2006)

"The safety and convenience of **all users** of the transportation system including pedestrians, bicyclists, transit users, freight, and motor vehicle drivers shall be **accommodated and balanced** in all types of transportation and development projects **and through all phases of a project** so that even the most vulnerable - children, elderly, and persons with disabilities - can operate safely within the public right of way."

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Why Complete Streets?

- **Health:** support active transportation, address obesity and improve health.
- **Economy:** draw people to shop, live, and work in walkable, livable communities.
- **Safety:** design to protect all users, reduce speeding and decrease crashes.
- **Changing Needs:** Chicagoans are driving less and using other modes
- **Environment:** support quality of life without depleting natural resources.
- **Cost:** help each dollar invested best control long term costs.

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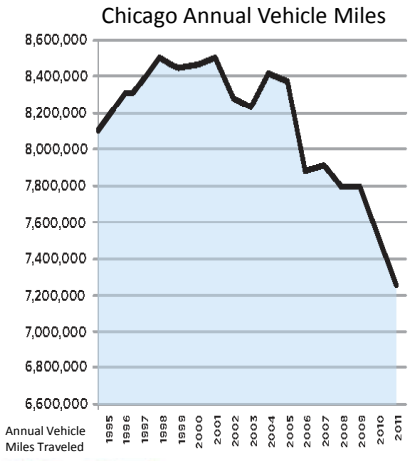
Driving is down; transportation choices up



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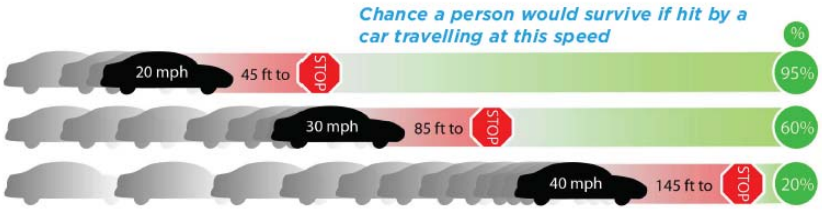
CDOT Goals

- Eliminate pedestrian crash fatalities in ten years (2022)
- Reduce pedestrian and bike crash injuries 50% in five years
- Reach 50% of commute trips made by walking, biking, transit, and working from home by 2030 (currently 38%)



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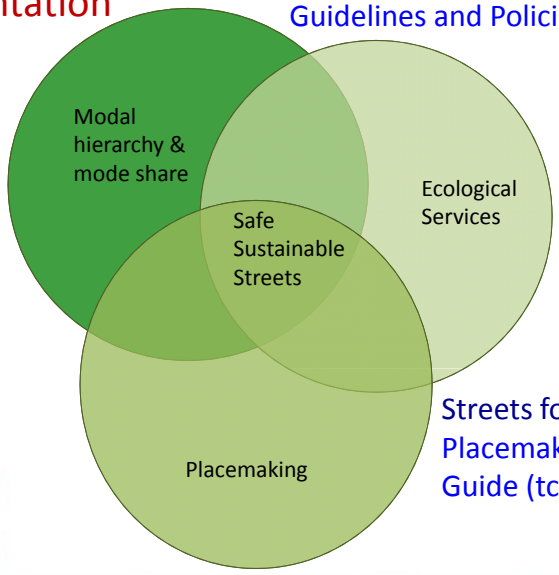
From Policy to Implementation

Sustainable Urban Infrastructure: Guidelines and Policies

Complete Streets Chicago: Design Guidelines



Streets for People: Placemaking Guide (tc)

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Implementation: Process

1. **Selection**: Prioritize projects for complete streets
2. **Scoping**: Consider all modes; i.d. building and roadway form and function & project goals
3. **Design**: Address goals and opportunities defined in scoping
4. **Construction**: Ensure project built as designed, for complete streets
5. **Measurement**: Evaluate effectiveness of complete streets
6. **Maintenance**: Ensure all users continue to be accommodated

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Project Specific Guidance

- Project Delivery Notebook
  - Step by step design decision-making guidance and documentation
  - Stop gaps and controls for project managers
  - Requirements vary by project type
- Compliance Committee
  - Ensures CDOT compliance to guides/policies
  - Approves variances as needed

CDOT COMPLETE STREETS & SUSTAINABILITY PROJECT DELIVERY Steps by Project Type

Select your project type here. This chart shows which steps are required (x), optional (o), or not required.

Project Type: Signage & pavement marking improvements

	1	**PROJECT SELECTION**
x	1.1	Identify Project Initiation
x	1.2	Identify Project Budget
	2	**SCOPING**
x	2.1	Establish Project Goals & Requirements
	2.2	Research
x	2.2.1	Examine Crash Report Summaries
x	2.2.2	Examine Relevant Planned/Programmed Roadway Projects
	2.2.3	Examine Neighborhood and Modal Plans
	2.2.4	Examine Notable Developments Within or Near Project Area
	2.2.5	Review Prior Transportation & Traffic Studies
	2.2.6	Examine Existing Sustainability Data Sets
	2.2.7	Summarize Prior Public Engagement
x	2.2.8	Update Budget
	2.3	Site Visits
x	2.3.1	Initial Observation
x	2.3.2	Observation checklist
	2.3.3	Building Form and Function
x	2.3.4	Roadway Form and Function
	2.3.5	Typical Sections
x	2.3.6	Intersection and Mid-block Crossing Worksheets
	2.4	Mapping and Analysis
o	2.4.1	Generate and Analyze Typology Maps
	2.4.2	Generate and Analyze Activity Maps
	2.4.3	Generate and Analyze Volume Maps
x	2.4.4	Generate and Analyze Crash Maps
o	2.4.5	Identify Preliminary Sustainability Strategies
x	2.4.6	Create Outreach Plan
x	2.5	Modal Deficiencies & Hierarchy
x	2.6	Revisit Project Goals and Environmental Requirements; Formalize Strategies
	3	**DESIGN**
	3.1	Create Design Alternatives
x	3.1.1	Summarize Project Information from Scoping
x	3.1.2	Cross Section Development
	3.1.3	Perform Sustainability Calculations
x	3.1.4	Identify Sustainable Features
x	3.1.5	Initial Public Engagement
	3.2	Schematic Design
o	3.2.1	Analyze Crashes and Design for Safer Streets
x	3.2.2	Apply Street and Intersection Designs and Policies
x	3.2.3	Create Geometric Layout
x	3.2.4	Conduct Signal Timing Analysis
o	3.2.5	Conduct Traffic Impact Studies
	3.2.6	Review Intersection Design
x	3.2.7	Verify sustainable requirements or request variance
	3.3	Obtain Feedback and Approvals
x	3.3.1	Engage Internal Partners
x	3.3.2	Engage External Agencies
	3.3.3	Engage Public Stakeholders
	3.4	Design Impact Evaluation
o	3.4.1	Calculate Projected MMLOS
	3.4.2	Conduct Stormwater Modeling
	3.4.3	Perform Sustainability Valuation
x	3.5	Prepare Preferred Alternative
x	3.6	Record Design Outputs

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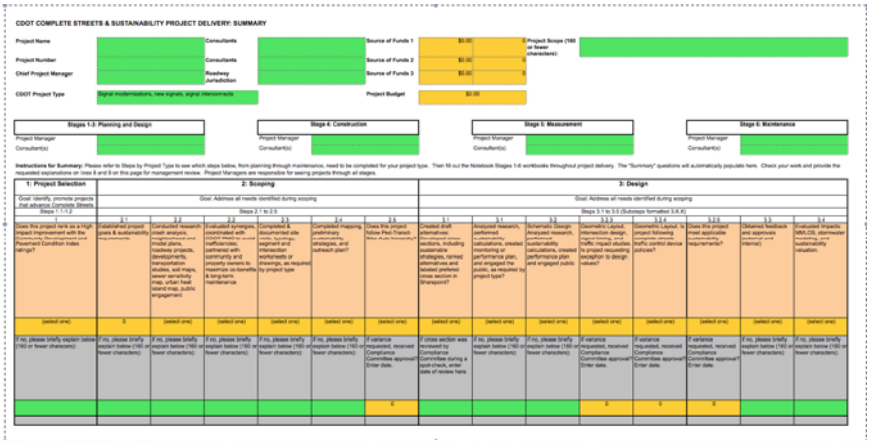
Project Delivery Process and Tracking

- Project Delivery Summary Sheet - Notebook
  - Project "snap shot" for CDOT management
  - Tracks chain of ownership as project develops
  - Construction RE will receive from design PM along w/ documentation
  - Hand back to PM for Maintenance & Commissioning


CDOT COMPLETE STREETS & SUSTAINABILITY PROJECT DELIVERY: SUMMARY

Project Name
Project Number
Chief Project Manager
CDOT Project Type
Consultants
Consultants
Roadway Jurisdiction
Source of Funds 1
Source of Funds 2
Source of Funds 3
Project Budget
Project Scope (160 or fewer characters):
Signal modernizations, new signals, signal interconnects
Stages 1-3: Planning and Design
Stage 4: Construction
Stage 5: Measurement
Stage 6: Maintenance
Project Manager
Consultant(s)
Instructions for Summary: Please refer to Steps by Project Type to see which steps below, from planning through maintenance, need to be completed for your project type. Then fill out the Notebook Stages 1-6 workbooks throughout project delivery. The "Summary" questions will automatically populate here. Check your work and provide the requested explanations on rows 8 and 9 on this page for management review. Project Managers are responsible for seeing projects through all stages.
1: Project Selection
2: Scoping
3: Design
Goal: Identify, promote projects that advance Complete Streets
Goal: Address all needs identified during scoping
Goal: Address all needs identified during scoping
Steps 1.1-1.2
Steps 2.1 to 2.5
Steps 3.1 to 3.5 (Substeps formatted 3.X.X)
1
2.1
2.2
2.3
2.4
2.5
3.1
3.1.1
3.2
3.2.3
3.2.6
3.2.5
3.3
3.4
Does this project rank as a High Impact Improvement with the Community Development and Pavement Condition Index ratings?
Established project goals & sustainability requirements
Conducted research (crash analysis, previous studies and model plans, roadway projects, developments, transportation studies, soil maps, sewer sensitivity map, urban heat island map, public engagement
Evaluated synergies, coordinated with other projects, and inefficiencies; partnered with community and property owners to maximize co-benefits & long-term maintenance
Completed & documented site analysis, segment and intersection worksheets or drawings, as required by project type
Completed mapping, preliminary alternatives, strategies, and outreach plan?
Does this project follow Peer Transit-Friendly Arts Institutions?
Created draft alternatives (typical cross sections, including sustainable strategies, named alternatives and labeled preferred cross section in Sharepoint?
Analyzed research, performed multimodal calculations, created monitoring or performance plan, and engaged the public, as required by project type?
Schematic Design Analyzed research, performed sustainability calculations, created performance plan and engaged public
Geometric Layout, intersection design, signal warrant, traffic impact studies Is project requesting exception to design values?
Geometric Layout Is project following applicable roadway traffic control device policies?
Does this project meet applicable sustainability requirements?
Obtained feedback and approvals (external and internal)
Evaluated impacts: MMLOS, stormwater modeling, and sustainability valuation.
(select one)
0
If no, please briefly explain below (160 or fewer characters):
If variance requested, received Compliance Committee approval? Enter date.
If cross section was reviewed by Complance Committee during a spot-check, enter date of review here.

Complete Streets Design Guide

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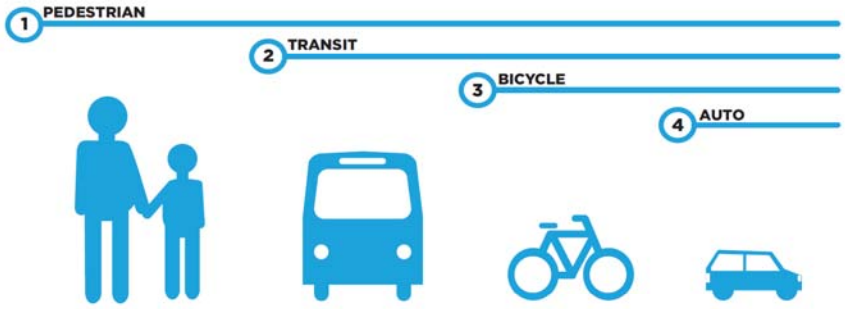
Modal Hierarchy: Pedestrian First



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What Does it Look Like?

Research before Scoping

Before designing, consider:

Crash history – each mode

Planning documents

- Neighborhood plans, transportation plans, developments

Environmental conditions

- Soil type, flooding, heat island, public space opportunities

Who uses road and how?

- Site visit
- Observe all modes

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KIMBALL/ LAWRENCE

Pedestrian & Bicyclist Crashes 2008-2012

Pedestrian Crash Severity

- No Injury
- Not Serious
- Serious
- Fatality

Bicyclist Crash Severity

- No Injury
- Not Serious
- Serious
- Fatality

Total Pedestrian Crashes within 1/8 Mile: 27

Total Bicyclist Crashes within 1/8 Mile: 18

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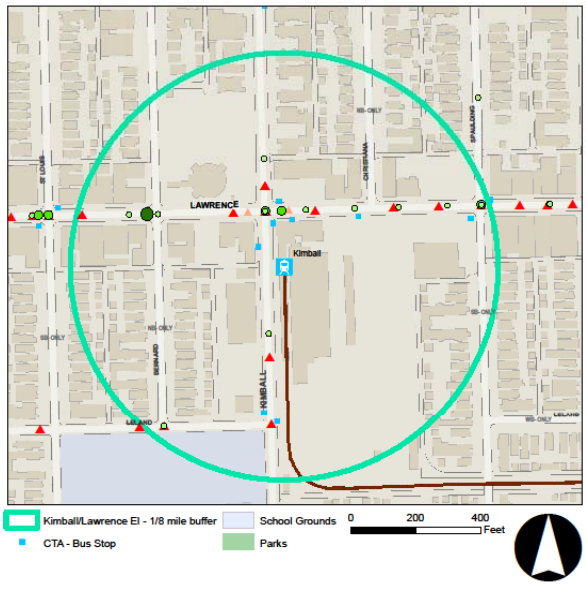
Pedestrian Program, 1/8/2014



Typology & Data

Before designing, consider:

Building Form & Function
- Land use, structures, regulatory framework, businesses

Roadway Form & Function
- Character of roadway, speeds, number of lanes, users, parking demand, traffic operations

Intersections & Crossings
- Common conflict points

Special Designations
- Statutory, operational, and planning categories such as snow routes, Pedestrian Streets, bicycling spoke routes, jurisdiction

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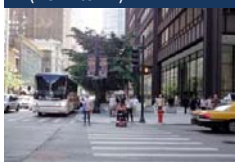
Typology: *Building Form & Function (p. 31-37)*

R (Residential)

M (Mixed-Use)

D (Downtown)



C (Commercial Center)

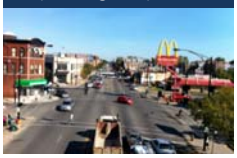
IC (Institutional or Campus)

IN (Industrial)

P (Parks and Open Space)

Typology: *Roadway Form & Function (p. 38-43)*

TH (Thoroughfare)



Western Avenue

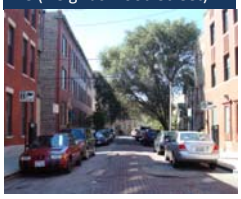
CN (Connector)

Indiana Avenue

MS (Main Street)

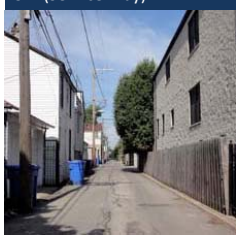
Peoria Street

NS (Neighborhood Street)



Concord Place

SW (Service Way)



Alley near Honore Street

PW (Pedestrian Way)

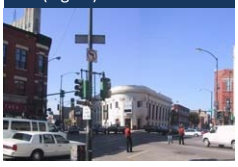
Riverwalk

Typology: *Intersections and Crossings (p. 44-50)*

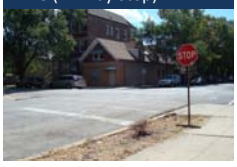
MID (Mid-block Pedestrian Crossing)

RBT (Roundabout, Traffic Circle)

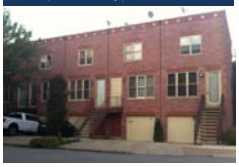
SIG (Signal)



AWS (All-way Stop)



DW (Driveway)



STY (Stop, Yield)

UNC (Uncontrolled)

Sustainable Urban Infrastructure Guidelines and Policies (SUIG)

- Mission and Purpose: create and maintain a city where all benefit from a high quality of life without depleting our natural resources
- 8 Environmental categories for public ROW
  - **Objectives** prioritized by need
  - **Requirements** and policies that provide means and methods to meet objectives
  - **Strategies** to implement the requirements

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Categories and Objectives

ECONOMICS

OBJECTIVES

Quantify the environmental value of investment
Enhance property values
Coordinate with other city departments and agencies
Streamline utility coordination and installation
Maximize implementation of adaptation strategies
Support green collar job creation

WATER

OBJECTIVES

Reduce basement and street
Reduce CSO events and volumes
Reduce potable water use
Clean and direct stormwater to natural water bodies
Reduce non-point source pollution to natural water bodies
Ensure erosion and sediment control

ENERGY

OBJECTIVES

Reduce Energy use
Use clean and renewable energy
Generate and transmit renewable energy

MATERIALS & WASTE

OBJECTIVES

Maximize construction waste reduction and recycling of construction waste.
Maximize the reuse of materials and the use of recycled materials.
Support sustainable production practices

Categories and Objectives

URBAN ECOLOGY

OBJECTIVES

Create and support natural habitat
Protect and restore natural habitat
Allow for interaction and observation
Of both people and the natural world

BEAUTY & COMMUNITY

OBJECTIVES

Implement the complete streets policies
Create unique and quality spaces that reflect the local neighborhood
Educate and promote environmental awareness
Include stakeholder input in your decision making process

CLIMATE & AIR QUALITY

OBJECTIVES

Reduce urban heat island effect
Use low-emitting materials
Promote alternative fuel use
Reduce emissions related to construction activities

COMMISSIONING

OBJECTIVES

Maintain the site year round to ensure environmental benefits
Identify and develop design tools to predict performance
Evaluate verify and document performance and update design tools

Design Guidance

- Modal Hierarchy
- Design Trees
- Cross-Section Elements
- Intersections
- Geometric and Operational Policies

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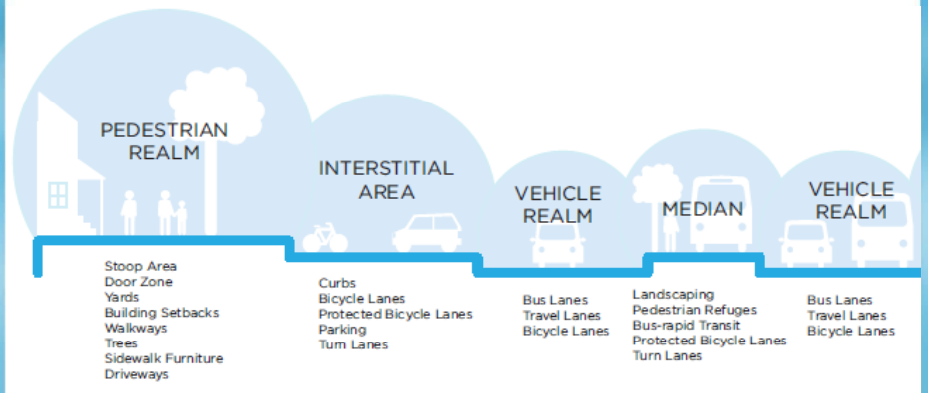
Design Guidance

Cross Section Elements (p. 89)



Cross-Section Elements

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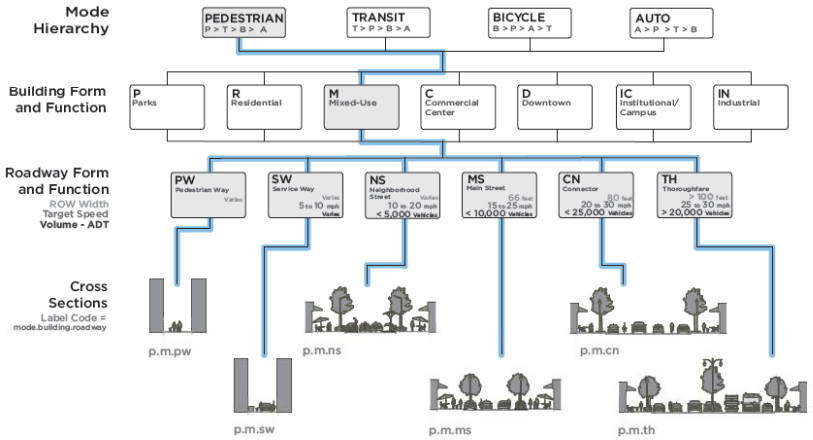
Design Guidance

Design Trees (Appx. A)



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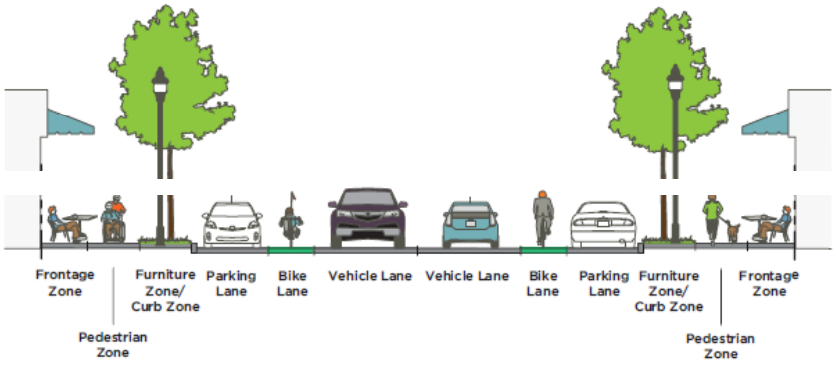
Design Guidance

Sample Cross Section (Appx. A)



Cross Section Code: p.m.cn
Typical Roadway Width: 80 Feet

Mode Hierarchy: Pedestrian - P > T > B > A
Building Form and Function: Mixed-Use
Roadway Form and Function: Connector

Design Guidance

Geometric and Operational Policies

- Level of Service
- Traffic Control (Signals)
- Right Turn on Red
- Design and Control Vehicles
- Design and Target Speed
- Lane Widths

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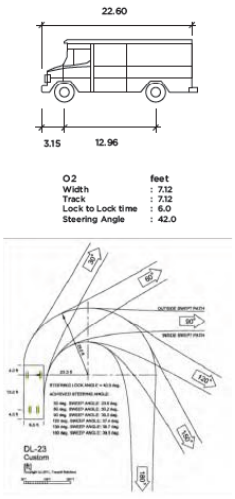
FIGURE 37



DL-23 Profile and Turning Template

Design Guidance

Intersections

- Small, simple intersections
- Minimize crossing length, locate at desire lines
- Align lanes
- Square off
- Manage speed
- Organize buses and cyclists
- Prioritize signals for peds
- Convert excess pavement

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Design Guidance

Speed Control

- Synchronize signals to target speed
- Narrow lanes & roadways
- Traffic calming
- Limit sight distances
- Terminating vista
- Trees, landscaping, poles, crosswalks

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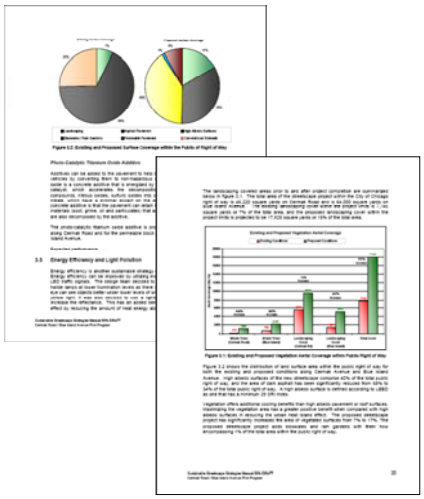
Documentation

Assign specific personnel to track compliance during design and construction, in coordination with RE

Documentation Reports that may be required include:

- Stormwater Pollution Prevention Plan
- Construction Waste Management Plan
- Noise Mitigation Plan
- Traffic Management Plan
- Stakeholder Involvement Plan
- Monitoring & Commissioning Plan
- Maintenance Plan



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Quantifying Assets vs. Measuring Success

Tracking Assets Installed:

Outputs – Examples

- Pedestrian Refuge Islands
- Center median (miles)
- Pedestrian countdown timers
- Protected bike lanes (miles)
- LED fixtures
- Waste management plan
- Noise Mitigation Plan

Measuring Success :

Performance Metrics – Examples

- % reduction in pedestrian crashes
- % reduction total crashes
- Gallons of stormwater stored, released at .9 CFS or less
- Area of permeable concrete/asphalt
- % recycled material by cost
- % waste diverted from landfill
- Area of high albedo pavement

* Maintenance & Commissioning is affected by Construction Phase data quality

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Commissioning

- Design, Construction, and Commissioning Performance Report
- Details implementation of Sustainable Goals, Including Ideas Not Selected
- Living Document to Include Construction and Commissioning Reports

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Impacts to Construction Practices

•Construction Sequencing;
  - •Stormwater BMP Implementation & Protection
  - •Clean Diesel Ordinance

•Regional materials;

•Construction waste management;
  - •Defining the denominator
  - •Demolition vs. Deconstruction

•Wide adoption of sustainable pavement mix designs

•General and subcontractor documentation compliance.

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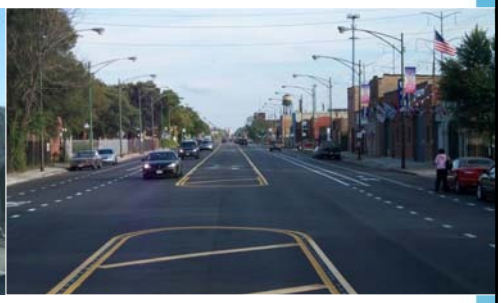
Getting Started – South Chicago Ave

(Before) South Chicago – Looking SE



(After) South Chicago – Looking SE

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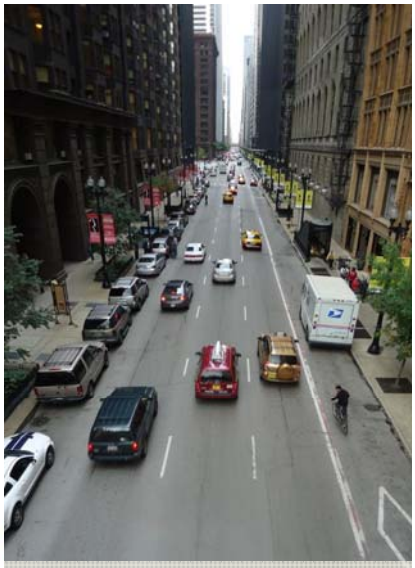
Dearborn Street



Dearborn Street - Before

Dearborn Street - After

Lawrence Avenue – Existing Conditions

Existing Cross Section

Lawrence Avenue – Proposed Conditions

Proposed Cross Section

Pilsen - Pre-construction Conditions

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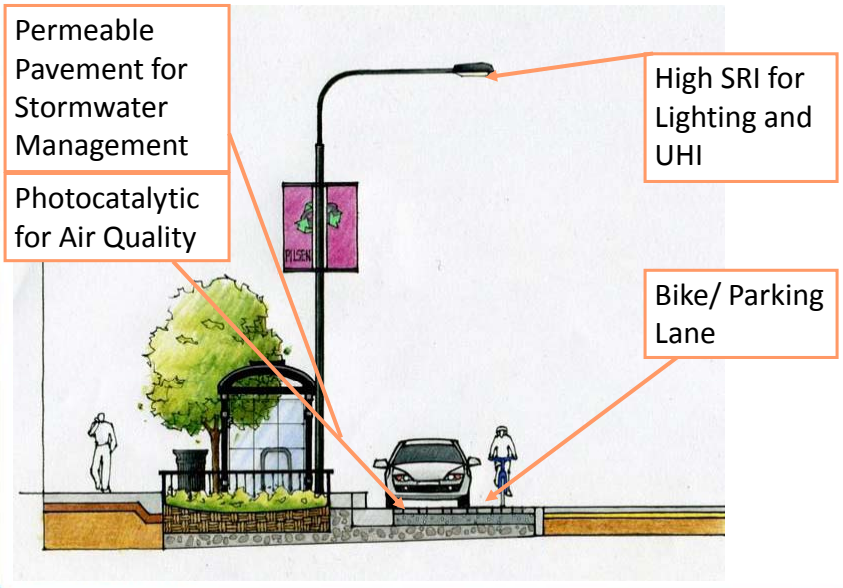
Pilsen Sustainable Street



Thank You!

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